

TRAINING IN CALCULATING CULTIVATION COSTS FOR LEADING COMMODITIES FOR AGRICULTURAL SECTORS IN WEST LOMBOK

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Abstract

West Nusa Tenggara Province relies heavily on agriculture, which contributed 22.23% to regional GDP in 2023 and remains the main source of employment, particularly on Lombok Island. Despite its importance, farmers continue to face inefficient production, unstable market prices, inaccurate production-cost calculations, climate change, land degradation, limited access to technology, and weak financial management. This community service program addresses these challenges through training in cost-of-production calculation using the value-of-time concept, financial literacy, and financial record-keeping assistance. The program also introduces a Microsoft Excel-based financial management tool supported by Visual Basic for Applications. Its implementation is expected to improve financial efficiency, strengthen participants' confidence in responding to market challenges, support better-informed decision-making, enhance product competitiveness, and ultimately contribute to improving the welfare of farmers and small business operators in Kuripan Village.

Keywords: Agriculture; Costs; Cultivation; Value of Time; Leading Commodities

INTRODUCTION

Agriculture plays a strategic role in promoting sustainable economic development and constitutes an important pillar in efforts to improve public welfare in Indonesia. As a vital sector, agriculture not only provides employment for a large proportion of the population but also serves as the primary source of income for farmers across various regions (FPSA, 2024). However, the sector faces increasingly complex challenges, including the unpredictable effects of climate change, growing land constraints, and commodity price fluctuations that frequently undermine farmers' economic stability. These conditions often hinder the development of the agricultural sector and the improvement of farmers' welfare. Therefore, a more comprehensive and integrated approach is required to address these challenges effectively (Wahyudin et al., 2024).

West Nusa Tenggara (NTB) Province is one of Indonesia's regions with a significant contribution from the agricultural sector. With a land area of 20,153.15 km², agriculture constitutes the principal source of livelihood for a large proportion of the population. Major commodities, including rice, maize, soybeans, and horticultural products, play an important role in supporting regional and national food security. In addition, the livestock and fisheries subsectors further enhance NTB's agricultural potential. Agriculture in NTB also holds strategic value in supporting the development of export commodities (BPS NTB, 2023). Maize, for example, is one of the province's leading commodities and is marketed outside the region and even exported. Meanwhile, various high-value horticultural commodities, such as chillies, tomatoes, and vegetables, are increasingly cultivated by local farmers. Furthermore, support from the regional government through land productivity improvement programmes has contributed to the more rapid development of the agricultural sector.

The agricultural sector plays a highly important role in NTB's economic structure. In 2023, it contributed 22.23% to NTB's Gross Regional Domestic Product (GRDP), making it one of the largest sectors in the regional economy. It is also the largest source of employment, with the majority of Lombok Island's population engaged in agricultural activities, either directly or indirectly. Lombok Island, which forms part of NTB Province, is recognised for the diversity of its agricultural commodities. Various agricultural development programmes have been implemented to improve farmers' welfare and strengthen food security. However, despite its substantial contribution, the agricultural sector continues to face significant constraints related to production efficiency, cost management, and marketing. Farmers frequently experience unstable market price fluctuations, which are further exacerbated by inaccurate calculations of production costs (Ratu et al., 2024). Climate change, land degradation, and limited access to modern technology also constitute major challenges for farmers. In addition, ineffective financial management, including the incomplete calculation of production costs, often reduces the competitiveness of agricultural products (Zarefar et al., 2023). Addressing these issues is therefore essential to improving the efficiency and profitability of the sector.

Kuripan Village, located in West Lombok Regency, is an area with considerable agricultural potential. The village is known as a producer of high-quality seedlings, particularly for horticultural crops. Seedlings produced in Kuripan Village have established a favourable reputation in local and regional markets, making them one of the area's leading commodities. In this context, improved farm management, including cost-management training, is highly important for strengthening the competitiveness of Lombok Island's agricultural products in local and national markets. By improving farmers' capacity to calculate production costs accurately, the sustainability of their farming businesses can be better ensured.

Despite this considerable potential, farmers in Kuripan Village continue to face several challenges. Based on preliminary observations, the following existing conditions require particular attention. First, farmers lack accurate production-cost calculations. Most farmers engaged in seedling cultivation in Kuripan Village do not calculate production costs systematically. Their calculations generally include only direct expenditures, such as the costs of seeds, fertilisers, and pesticides, without considering indirect costs, including family labour and the time devoted to production activities. Second, farmers do not incorporate the value of time into their calculations. Seedling farmers in Kuripan Village tend to disregard the value of time when calculating the cost of production. Consequently, the opportunity cost of the time allocated to cultivation activities is not reflected in the selling price of the seedlings. This results in profit margins that are lower than they should be. Third, farmers have limited knowledge of financial management. Most farmers do not maintain adequate financial records, making it difficult for them to evaluate business efficiency and establish competitive selling prices. Fourth, farmers face price fluctuations and market instability. Their dependence on local and regional markets frequently exposes them to substantial price fluctuations. Without accurate cost calculations, farmers find it difficult to adjust their selling prices in response to changing market conditions.

Given the considerable potential of Kuripan Village, training in the calculation of cultivation costs using a value-of-time approach is highly relevant. This approach can not only assist farmers in improving production efficiency but also enhance their understanding of the importance of time management in agricultural enterprises.

RESEARCH METHODS

This community service program is designed to provide practical solutions to the problems faced by farmers in Kuripan Village. Through a holistic approach encompassing technical, managerial, and marketing aspects, the program is expected to generate sustainable positive changes in the welfare of farmers and the village community as a whole. Based on relevant references and the needs of

farmers in Kuripan Village, the proposed stages and methods of the community service program are as follows:

1. Preparation Stage

At this stage, the first activity is to identify the main problems through Focus Group Discussions (FGDs) involving individual farmers and farmer groups. The community service team will identify the principal challenges faced by seedling farmers in Kuripan Village. The discussions will also explore the farmers' expectations and specific needs to ensure that the program is appropriately targeted. Based on the FGD results, the team will subsequently develop a training module. The module will cover technical aspects, including the calculation of production costs and the use of simple technology, as well as managerial aspects, such as financial record-keeping and marketing. The module will adopt a local problem-based approach so that the materials are more relevant and easier for farmers to understand.

2. Implementation Stage

The training will be conducted through several interactive sessions, including:

- a. **Calculation of Production Costs.** Farmers will be trained to calculate production costs using a simple method supported by tools such as Excel-based financial reports. Case studies from Kuripan Village will be used to simulate the calculations.
- b. **Application of the Value of Time.** Farmers will be taught how to calculate and incorporate the value of time into production costs. They will gain an understanding of the importance of measuring the economic value of time as a component of production costs.
- c. **Digital Marketing.** Farmers will be trained to use social media platforms, such as Facebook and Instagram, to promote their products. In addition, e-commerce platforms, such as Tokopedia and Shopee, will be introduced as channels for expanding their market reach.

3. Field Practice

Following the training sessions, farmers will directly apply what they have learned in the field. The community service team will provide assistance during this process to ensure that the practices are implemented appropriately. Intensive mentoring will be conducted for four to six months after the training. During this period, the team will make regular visits to Kuripan Village to provide direct assistance. The mentoring will focus on the application of production cost calculations, financial record-keeping, and marketing strategies.

4. Monitoring and Evaluation Stage

The team will monitor field implementation through regular visits and interviews with farmers. During this period, observations will be conducted to assess the extent to which the training has addressed problems related to production-cost calculations. The team will also examine whether any components of the Excel-based financial template do not function properly and therefore need to be added, removed, or integrated with other components. Any remaining constraints will be documented as findings. Accordingly, even during the post-training period, the program may return to an earlier stage to further formulate solutions to the identified problems. The monitoring results will be used to improve future community service programs. The final stage involves the handover of the training module. The module will be provided to

the local community or village government as a guide for conducting similar training activities in the future.

RESULTS AND DISCUSSION

The community service program implemented in Kuripan Village, West Lombok Regency, successfully achieved its primary objective of strengthening farmer groups' capacity to understand and apply production cost calculations using a value-of-time approach, while also introducing simple financial recording practices through a specially designed Excel template. The program involved two farmer groups as its main partners. Prior to the program, both groups faced limitations in managing their businesses financially and had limited understanding of the importance of accurate production cost calculations. The program began with the development of a training module based on local needs, integrating technical aspects of cost accounting with a simple management approach. The module was subsequently used in interactive training and workshop sessions, during which the farmers not only learned the theory of calculating the cost of production but also practised directly through simulations based on actual horticultural seedling cultivation activities in Kuripan Village.

One of the key outcomes of the training was the increased awareness among farmers of the importance of incorporating the value of time, or opportunity cost, as an integral component of production cost calculations. This represented a shift in perspective from viewing production merely as a physical activity to recognising it as an economic activity that requires comprehensive cost measurement. In addition, the introduction of the Excel template proved to be an effective instrument for developing farmers' financial recording skills. The template enabled farmers to enter data systematically on raw materials, labour, and production overheads. Through automated calculations, farmers could immediately obtain information on total production costs and production costs per unit.

During the mentoring process, the farmers demonstrated improved skills in operating the template, including the use of basic features such as entering transaction data, reading summary profit-and-loss reports, and interpreting production cost charts. This adaptation indicates that simple technology can be effectively integrated even when most farmers have relatively limited educational backgrounds. Another significant outcome was the development of financial literacy practices within the farmer groups. With structured financial records, farmers were able to conduct periodic evaluations of their cash flows and business profits. Several farmers also reported changes in their seedling pricing strategies. Whereas selling prices had previously been determined solely by prevailing market prices, they were now beginning to consider more accurate production cost calculations. This strengthened the farmers' bargaining position when responding to fluctuations in local market prices.

Intensive post-training mentoring also demonstrated the sustainability of the program's impact. The community service team conducted regular monitoring, which showed that both farmer groups had begun to develop the habit of entering data into the template. Nevertheless, several technical constraints remained, including a lack of accuracy in recording daily transactions and initial difficulties in converting working time into monetary values. These constraints, however, formed part of the learning process, and the farmers gradually demonstrated greater independence in managing their financial records.

Overall, the program generated significant changes in both technical and managerial aspects. From a technical perspective, the farmers now possess a practical tool for calculating production costs and business profits more accurately. From a managerial perspective, they have begun to understand the importance of financial record-keeping as a basis for decision-making, while also recognising the value of time as an economic factor in farming activities. These achievements not only contribute to improving the efficiency and competitiveness of Kuripan Village's high-quality seedling products but also create opportunities for developing marketing strategies that are more

adaptive to market dynamics. Therefore, the program provides not only short-term solutions but also strengthens the foundations of the farmers' long-term economic sustainability.

The community service program not only improved technical capacity in production cost calculation and financial record-keeping but also generated tangible social and economic impacts for the farmer groups in Kuripan Village. From a social perspective, the training and mentoring activities successfully encouraged collective awareness among farmers of the importance of data-driven farm business management. Before the program, most farmers operated their businesses individually using traditional practices. However, through group discussions, case simulations, and collaborative practice in operating the Excel template, a stronger sense of cooperation and mutual learning emerged among the participants. This dynamic strengthened social solidarity within the farmer groups and increased their confidence in managing their businesses more professionally.

In addition, the training strengthened the role of younger generations in the village. Several younger members of the farmer groups, who were more familiar with digital technology, assumed the role of internal facilitators in operating the Excel template and assisting older members. This created intergenerational knowledge transfer and supported the continued use of the simple technology introduced through the program. Accordingly, the community service program also contributed to the inclusive empowerment of the village community. From an economic perspective, more accurate production cost calculations had a direct effect on seedling pricing strategies. Farmers no longer relied solely on fluctuations in market prices but were able to negotiate prices more confidently on the basis of the production cost information available to them. This strengthened their bargaining position while reducing the risk of losses arising from selling prices set below production costs.

Several farmers reported increased profit margins after applying a full-costing approach that incorporated family labour costs and the value of time into the cost structure. Furthermore, simple financial record-keeping through the Excel template enabled farmers to conduct periodic evaluations of their business performance. Using cash-flow data and monthly profit-and-loss statements, the farmers were able to identify areas of inefficiency, such as excessive use of raw materials or an imbalanced allocation of labour. This information encouraged them to make operational adjustments, thereby improving production efficiency. In turn, these efficiency improvements increased the farmers' opportunities to allocate part of their profits to small-scale investments, such as purchasing simple production equipment or diversifying their products.

CONCLUSION

The community service program implemented in Kuripan Village successfully strengthened the capacity of farmer groups to manage their farming enterprises through the application of production cost calculations based on the value-of-time approach and simple financial record-keeping using an Excel template. The introduction of this innovation not only improved the accuracy of cost-of-production calculations but also fostered a new awareness that family labour has an economic value that must be taken into account. Consequently, farmers are better able to establish more realistic selling prices, improve business efficiency, and strengthen the competitiveness of horticultural seedling products in the market.

The success of the program was also reflected in changes in the farmers' managerial behaviour, as they began to maintain financial records systematically and use them as a basis for decision-making. Intensive mentoring ensured that the introduced technology could be adopted sustainably. The resulting socioeconomic impacts not only strengthened the farmers' bargaining position in the market but also enhanced local economic resilience. Therefore, this community service program made a tangible contribution to village community empowerment through the integration of simple technology and managerial innovation.

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